

What is claimed is:

1. An antenna comprising:

a dielectric substrate in which a plate thickness thereof is configured to be different at each of regions; and

5 a plurality of flat antenna patterns provided on the each of regions of the dielectric substrate,

wherein the plurality of flat antenna patterns each receives or transmits electric waves having different frequency bands respectively.

10 2. The antenna according to claim 1,

wherein a back side of the dielectric substrate is configured to be flat, the back side opposes to the side where the plurality of antenna patterns are provided,

15 wherein the back side of the dielectric substrate comprises a grounding conductor formed on the back side.

3. The antenna according to claim 2, wherein the dielectric substrate is made of a synthetic resin material.

4. The antenna according to claim 2, wherein the regions comprises:

20 a central region defined by a single closed line; and a plurality of annular regions surrounding the central region and each defined by two concentric closed lines,

wherein the plurality of annular regions are configured to have different height.

25 5. The antenna according to claim 2, wherein the flat

antenna patterns are disposed on each of the regions in order of the frequency bands of the electric waves that each of the flat antenna patterns receives or transmits.

6. The antenna according to claim 4, wherein the
5 thickness of each of the regions of the dielectric substrate are configured to increase sequentially from the central region to the annular region that is positioned outermost.

7. The antenna according to claim 4, wherein the
thickness of each of the regions of the dielectric substrate are
10 configured to decrease sequentially from the central region to the annular region that is positioned outermost.

8. The antenna according to claim 4, wherein the frequency
bands of the electric waves that each of the flat antenna patterns
receives or transmits are configured to increase sequentially
15 from the frequency bands of the electric wave that flat antenna pattern disposed on the central region receives or transmits, to the frequency bands of the electric wave that the flat antenna pattern disposed on the annular region that is positioned outermost receives or transmits.